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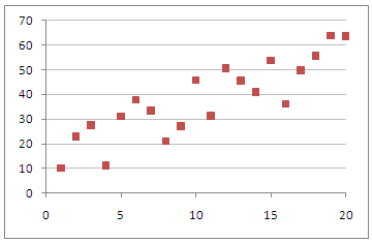
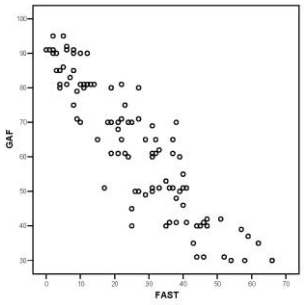
-When working with data values, the data sometimes tends to fit a pattern. This pattern in data is called _____.

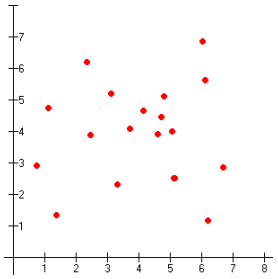
-Data can have two types of correlation:

-Data that increases over time is considered to be _____.

-Data that decreases over time is considered to be _____.







One way to analyze correlation in data is to use a _____. It is a way to model a set of data that has a linear trend.

-One of the easiest ways to get the line is to _____.

Steps to finding a regression equation using the calculator:

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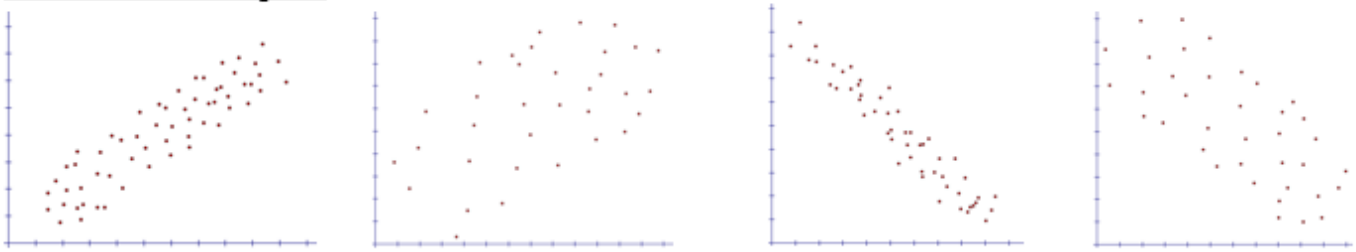
- r represent the _____ for the linear regression. The correlation coefficient indicates how closely the data points form a straight line.

  - For Positive Correlation, the correlation coefficient will be _____, where the closer r is to 1, the _____.

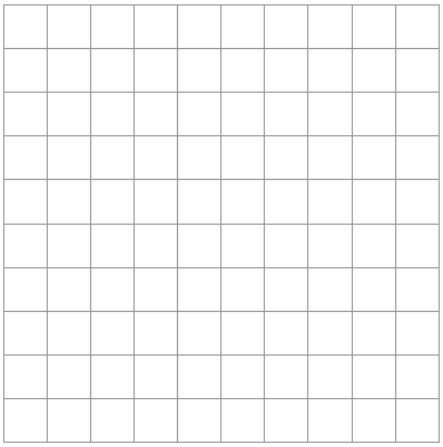
  - For Negative Correlation, the correlation coefficient will be _____, where the closer r is to -1, the _____.

Correlation Examples:



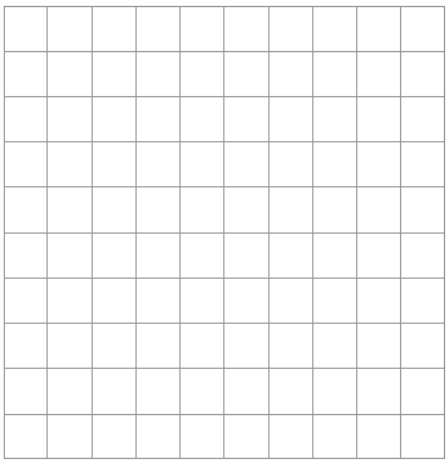
Example 1:

(0, 3), (1, 4), (6, 4), (3, 3), (2, 5), (9, 9)



Example 2:

X	Y
-7	5
-4	3
-3	2
0	-2
4	-4
6	-7



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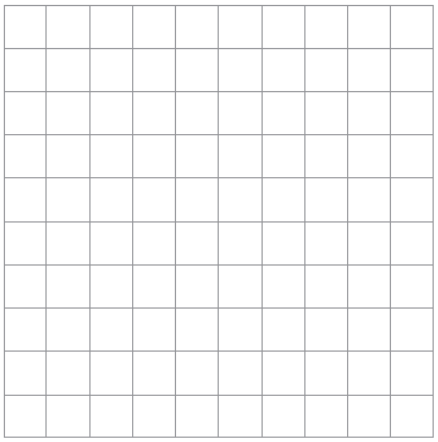
Example 3: The table below shows the age and systolic blood pressure for a group of people who recently donated blood. Draw the line of best fit for this data.

Age	36	25	49	50	35	55	30	27	42	38
Blood Pressure	129	108	141	136	120	147	133	104	131	122



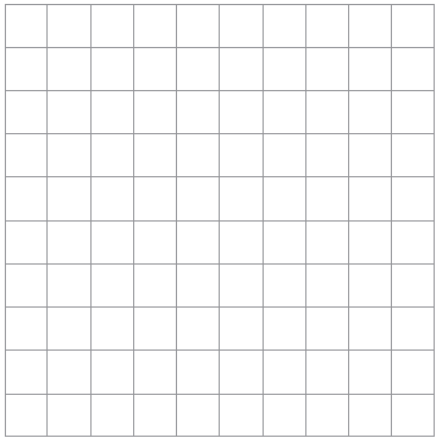
a. Is the data positively, negatively, or not correlated?

b. Using the line of best fit, estimate the blood pressure of a person who is 45 years old.

c. Using the line of best fit, estimate the age of a person who has a blood pressure of 160.

Example 4: The table shows the temperature for various elevations based on a temperature of 59°F at sea level. Draw a scatter plot of the data and describe the correlation shown.

Elevation (ft)	1000	5000	10,000	15,000	20,000	30,000
Temperature (°F)	56	41	23	5	−15	−47



a. Is the data positively, negatively, or not correlated?

b. Using the line of best fit, estimate the temperature at an elevation of 12,000 feet.

c. Using the line of best fit, estimate the elevation if the temperature is 70 degrees.

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The amount of antibiotic that remains in your body over a period of time varies from one drug to the next. The table given shows the amount of Antibiotic X that remains in your body over a period of two days.

Time (hours)	0	6	12	18	24	30	36	42	48
Amount of Antibiotic X in Body (mg)	60	36	22	13	7.8	4.7	2.8	1.7	1

Enter the data in the list and generate the Linear Regression Equation.

a= _____ b=_____ r = _____

Calculate the Exponential Regression Model for this data set.

a = _____ b=_____ r= _____

Looking at the Correlation Coefficient, which model is better?

The Center for Disease Control collected data on the percent of children aged 12 to 19 that were considered obese between the years 1971 and 2007. The data are given in the table.

Calculate the Linear Regression Model for the data set.

Year	Percent of Obese Children
1971	6.4
1976	5.0
1988	10.5
1999	14.8
2001	16.7
2003	17.4
2005	17.8
2007	18.1

Calculate the Exponential Regression Model for the data set.

Which model best fits the data? Explain.